

CLAIMS

What is claimed is:

1 1. A process for forming a metallic tubular connector of the type having a cylindrical
2 shell which extends circumferentially about a tubular body for joining said tubular
3 connector to a conduit, comprising the steps of:

4 i. gripping a first end portion of a tubular metallic body, having a
5 substantially uniform diameter and wall thickness, in a first forming
6 machine that utilizes a first forming tool for contact with said tubular
7 body;

8 ii. reducing the outside diameter of a second end portion of said tubular body
9 and sloping the intermediate surface portion joining said uniform diameter
10 first end portion and said reduced diameter second end portion;

11 iii. forming a first peripheral bead in the tubular body in said first end portion;

12 iv. gripping said tubular body first end portion on the portion thereof not
13 adjoining said intermediate surface portion in a second forming machine
14 that utilizes a second forming tool for contact with said tubular body
15 intermediate surface portion, said second tool carrying a metallic socket on
16 a first end portion thereof and having a longitudinal, central, axial passage
17 extending from said first end portion for an axial length exceeding the
18 diameter and at least the axial length of said tubular body reduced
19 diameter second end portion;

20 v. axially advancing said second forming tool toward said tubular body such
21 that said tubular body second end portion is freely received within said
22 longitudinal passage, said second tool first end contacting said sloped

23 intermediate surface portion and forming a second peripheral bead
24 adjacent said first peripheral bead; and

25 vi. compressing and locking an annular end surface of said socket between
26 said first and second beads.

1 2. The process as in claim 1 wherein said forming tools are punches.

1 3. The process as in claim 1 wherein said two beads have a combined axial extent of
2 at least four times the wall thickness of said tubular body, prior to undergoing the forming
3 process.

1 4. The process as in claim 1 wherein said series of tools is comprised of three
2 essentially equally spaced parallel rollers each having at least one protrusion extending
3 from its outer peripheral surface and said minimal contact occurs substantially
4 simultaneously between each of said at least one protrusion and said tubular body.

1 5. The process as in claim 1 wherein said tubular body is manufactured from a 5000
2 series aluminum alloy material.

1 6. The process as in claim 1 wherein after said first bead forming step, said first bead
2 includes a predetermined gap at about the center of its axial extent.

1 7. The process as in claim 6 wherein said predetermined gap, in said first bead, acts
2 as a buffer and provides room for additional compression of said first bead during the
3 forming step for said second bead.